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ABSTRACT

A study was conducted to identify aspects of self-knowledge about general cognitive activities, such as cognitive screening tests routinely used in school, hospital, and community settings. The study used SYSTEMS (R. Ouvrier and others, 1995), a brief one-to-one screening test that indicates whether a child requires full cognitive assessment. The Aspects of Self Knowledge-KIDS Inventory (ASK-KIDS) (L. Bornholt, 1996) was used to determine self-knowledge about activities in the SYSTEMS cognitive screening test. Participants were 188 Australian students, aged 5 to 11 years. ASK-KIDs profiles indicated that students felt good about the SYSTEMS activities, thought that the activities were easy, and believe they would be good at SYSTEMS activities the following year. Children's perceptions of the effort needed and task difficulty differentiated among two and three clusters of children. Lower perceptions for the following year differentiate a fourth cluster. Findings illustrate the importance of determining the diverse meanings children make of self-concepts. Findings also suggest that a multilevel model of aspects of self-knowledge applies to assessment of children's cognitive functioning in settings where cognitive screening is routinely used. (Contains 2 figures and 18 references.) (SLD)

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Social and personal influences on a sense of competence at a cognitive screening test for children

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Objectives

The aim of this study was to identify Aspects of Self Knowledge about general cognitive activities such as cognitive screening tests for children, that are routinely used in school, hospital and community settings. This study used SYSTEMS, a brief one-to-one screening test that indicates whether a child requires full cognitive assessment (Ouvrier *et al.*, 1995).

Background to the study

Consideration of children's self concepts is a major theme in developmental and educational psychology regarding cognitive, social and physical domains. In the cognitive domain, self concepts are a major contributor to academic behaviours, over and above actual performance (Marsh, 1991). As part of the learning spiral, self concepts contribute to how children approach and persist with the next difficult task (e.g., Harter & Connell, 1984). In practice, children's self perceptions of competence at activities provide valuable information, often at odds with actual performances. A child may under-estimate competence at some activities, and over-estimate others. As a consequence, associations between such domain specific self concepts and task performances are generally positive weak correlations. However, other personal and social influences may modify links between self concepts and performance, such as child's age, socio-economic indicators, and the specificity of the measure (Hattie, 1992).

These factors were taken into account in examining related yet discrete Aspects of Self Knowledge in the cognitive domain. Although a wealth of research shows the importance of domain specific self concepts about school subjects (maths, reading etc.), self concepts of activites used in formal assessment by school counsellors and health professionals are

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under-researched. In the present study, we followed the suggestion of Wigfield and Karpathian (1991) that defining self concepts and measuring sub-components and domains has not yet reached the point of diminishing returns. Extensive review of self concept assessment by Byrne (1996) shows that sound measures of inter-related multi-dimensional self concepts are available regarding school activities.

We applied the same principles to assessment of children regarding a cognitive screening test. For young children and children with special needs, particular requirements need to be addressed (Byrne, 1996, p.69). We need to maintain the child's interest, provide concrete descriptions, and use straightforward questions and methods of response.

The present study addresses these issues by using the ASK-KIDS Inventory (Bornholt, 1996). This multi-mode model (Widaman, 1985) brings together educational and psychological sources of perceptions about competence, to produce meaningful profiles of specific Aspects of Self Knowledge. The first mode includes perceptions of the domain specific activities (Shavelson *et al*., 1976; Byrne, 1996, p.240). Recent studies suggest these self perceptions about activities can be differentiated by quite young children (Marsh, Craven & Debus, 1993). The second mode covers personal aspects of self knowledge (good at, natural talent, effortful performance, task difficulty, next year). It is based on previous research about perceived difficulty of reading, natural talent at number activities, and effort needed in drawing activities (Wigfield & Karpathian, 1991; Eccles, Wigfield, Harold & Blumenfeld, 1993; Chapman & Tunmer, 1995; Bornholt, 1997). The model of related yet discrete Aspects of Self Knowledge is derived from previous work with adolescents (Bornholt, Goodnow & Cooney, 1994). It links perceived effort and task difficulty, and to perceived natural talent, that is related to perceptions of current and future performance.

Methods and data sources

The study identified profiles of related yet discrete Aspects of Self Knolwedge about activites (ASK-KIDS) in the SYSTEMS cognitive screening test. Preliminary analyses examined the influence of gender, age and socio-economic indicators on ASK-KIDS. Participants were boys and girls, across ages from 5 to 11 years (N = 188) from eight schools in metropolitan Sydney. The schools were selected from locations that varied in terms of Socio-Economic Index for Areas SEIFA (ABS, 1990).

Materials

ASK-KIDS uses a practice item to rate feelings about doing the cognitive activities, with ratings from one of five sad to happy faces. The five perceived competence items ask children direct questions: How good are you at these activities? How naturally talented are you at these activities? [the prompt was 'just natural, clever'] How much do you need to try at these activities? How hard are these activities for you? Next year, when you're in Year ___, How good will you be at these activities? Pictorial representations of five-point rating scales were used, with the younger children in mind.

SYSTEMS is a 46-item cognitive screening test designed for children aged 5 to 11 years. Age-appropriate cut-off scores assist the neurologist or child psychologist in deciding whether the child needs further full cognitive assessment (Ourvier *et al.*, 1998). Scores are 0 to 46.

Results

Profiles of ASK-KIDS about SYSTEMS indicated that children feel good about doing the SYSTEMS activities; think they are moderate to good at and talented at SYSTEMS activities; need to put in effort and that the tasks are quite easy; and that next year they will be good at the SYSTEMS activities. Results showed similar responses for boys and girls, from schools across socio-economic indicators for areas. Profiles were also similar across age groups, except that young children have slightly higher perceptions of being good at SYSTEMS activities. The inter-correlations among aspects confirmed that perceived natural talent at activities is a central notion among aspects of competence (Bornholt *et al.*, 1994).

The profiles of children's responses to ASK-KIDS about SYSTEMS tended to differentiate among several clusters of children, instead of forming one domain specific self concept about SYSTEMS activities. Children's perceptions of the effort needed and task difficulty differentiate among two and three clusters of children. Lower perceptions for next year define a fourth cluster, and the few children who do not feel as good at and talented at the SYSTEMS activities define the fifth cluster. Results supported proposed models of related yet discrete Aspects of Self Knowledge about school activities with adolescence and recently with young children (Bornholt *et al*, 1994; Bornholt, 1996).

The main outcome of this study illustrates the importance of determining the diverse meanings children make of self concepts. As a demonstration, separate models of self concepts about the cognitive screening activities were created for two groups of children. The focus was on how children perceived talent in relation to the effort needed for SYSTEMS activities. This has strong implications for their motivation in approaching such cognitive tasks. The relationship may be either (a) consistent where effortful performance draws on talent, or (b) inverse where high effort implies low talent or low effort implies high talent. (See discussion of 'ability:effort' see Dweck, 1987.)

The results challenge developmental theories of children's social cognition that suggest consistent relationships between perceived effort and ability are more differentiated for children older than 7 or 8 years (e.g. Nicholls, 1984). In this study, age profiles of ASK-KIDS SYSTEMS suggest that even some five-year old children show inverse (27%) rather than consistent (73%) links between talent and effort needed at SYSTEMS activities. From a clinical viewpoint, such diversity in what self concepts mean to children suggest that these children would take quite different approaches to SYSTEMS activities. Models of children's domain specific self concepts therefore extend general findings that relate to school-based activities, such as number, reading and drawing (Bornholt, 1996). Goodness of Fit Indicators (GFI) from Confirmatory Factor Analyses indicated that ASK-KIDS Model 1 of self concepts of SYSTEMS as one activity was a poor fit to the data. GFI for Model 2 of correlated components as self perceptions of performance and ability showed some improvement. For Model 3, goodness of fit was satisfactory for separate models of talent and effort as consistent in Model 3A or inverse relations in Model 3B.

Table 1.

Goodness of fit indicators for models of ASK-KIDS about the SYSTEMS cognitive test

Model		Chi sq	df	GFI	ChiSq/df	RMSR
1	One factor ASK about SYSTEMS	61.19	5	0.897	30.59	0
2	Related Performance and Ability	34.53	3	0.936	11.51	0.12
3A	Consistent Effort and Ability	3.95	5	0.983	0.79	0.04
3B	Inverse links from Effort to Ability	8.65	5	0.970	1.73	0.05

Note: According to Hoyle (1995), GFI > 0.90, ChiSq/df < 2.0, RMSR of zero are desirable

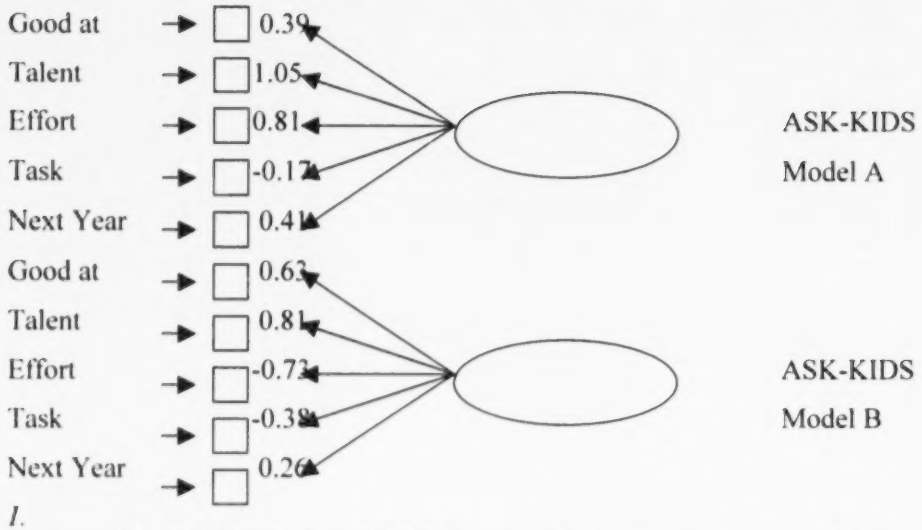
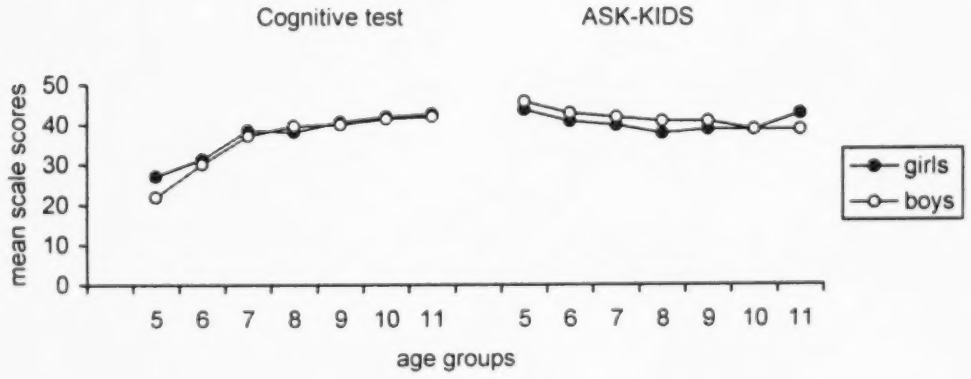
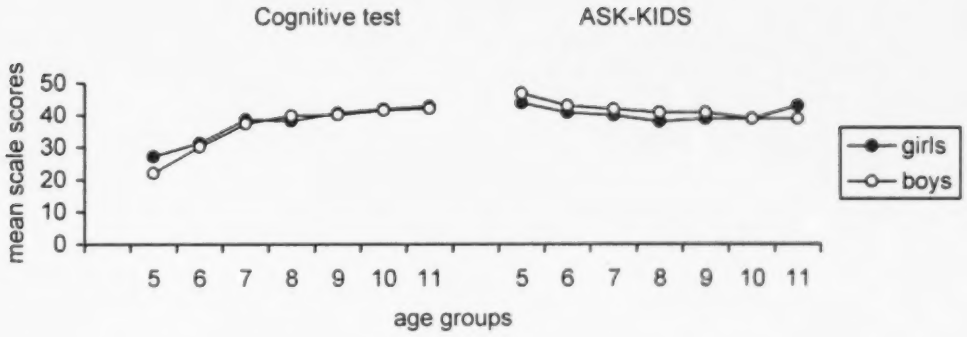


Figure 1.
Factor loadings for ASK-KIDS about SYSTEMS cognitive screening test for children, where links between Talent and Effort are Consistent (Model A) and Inverse (Model B)

Consequently, scale scores for self concepts about cognitive screening reversed the effort ratings for children who see effort and talent as inverse. Scores on ASK-KIDS were normally distributed (mean 3.6, SD 0.64) and ranged widely from 1.6 to 5.0 (on the five-point scale). As expected, actual cognitive screening test scores (mean 37.3, SD 6.2) increased with age, but ASK-KIDS about SYSTEMS cognitive screening did not vary with age. ASK-KIDS and SYSTEMS were similar for girls and boys. It was also evident that children either over- and under-estimate cognitive scores (partial correlation of 0.07 were child's age was controlled.).



Implications for professional practice



In assessing children's cognitive activities, a wealth of research prompts us to also consider the child's motivational and emotional state, as well as social factors that may moderate our findings and temper clinical judgements. Yet self concept research in the cognitive domain tends to focus on school-based activities such as reading and maths. This study demonstrated that self concept profiles are a brief yet meaningful way of tapping into a child's sense of competence at general cognitive activities. The findings suggest that a multi-model model of Aspects of Self Knowledge also applies to assessment of children's cognitive functioning in hospital and community settings where cognitive screening is routinely used.

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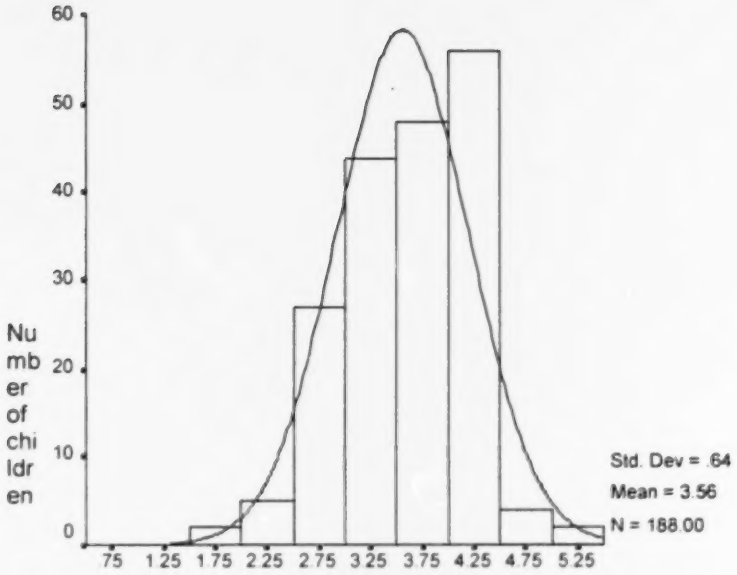

Figure 2. ASK-KIDS about SYSTEMS cognitive screening test